

**REGULATION 8
ORGANIC COMPOUNDS
RULE 20
GRAPHIC ARTS PRINTING AND COATING OPERATIONS**

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**REGULATION 8
ORGANIC COMPOUNDS
RULE 20
GRAPHIC ARTS PRINTING AND COATING OPERATIONS**

(Adopted April 12, 1980)

8-20-100 GENERAL

8-20-101 Description: The purpose of this Rule is to limit the emission of volatile organic compounds (VOC) from graphic arts operations ~~and graphic arts lines~~. Any graphic arts operation that which is determined to be exempt from the provisions of this Rule shall be subject to the provisions of Rule 4, if not already subject to another rule of Regulation 8.

(Amended December 4, 1985; October 6, 1993;)

8-20-110 Limited Exemption, Small User Low-Emitting Facility: ~~Until September 1, 1999, the requirements of this Rule shall not apply to any facility which emits less than 182 kilograms (400 pounds) of VOC in any month from graphic arts operations, including surface preparation and cleanup solvent, provided the requirements of Section 8-20-507 are met. Effective September 1, 1999, Until July 1, 2009, the requirements of this Rule shall not apply to any facility which that emits less than 79.4 kilograms (175 pounds) of VOC in any month from graphic arts operations, including surface preparation and cleanup solvent, provided the requirements of Section 8-20-503 are met. Effective July 1, 2009, the requirements of this Rule shall not apply to a facility that emits less than 34.0 kilograms (75 pounds) of VOC in any month from graphic arts operations, provided the graphic arts owner or operator complies at all times with the requirements of Section 8-20-503. For the purpose of calculating exemption applicability, emissions of volatile organic compounds from the use of non-heatset lithographic ink as determined by Section 8-20-601 shall be reduced by 95 percent pursuant to Section 8-20-409.~~

~~110.1 Exemption, Small User, Extreme Performance Screen Printing: Until January 1, 2003, the Extreme Performance Ink/Coating requirement of Section 8-20-307 shall not apply to any extreme performance screen printing facility which emits less than 182 kilograms (400 pounds) of VOC in any month from graphic arts operations, including surface preparation and cleanup solvent, provided the requirements of Section 8-20-406 are met.~~

(Amended April 19, 1989; October 6, 1993; March 3, 1999)

8-20-111 Limited Exemption, Laboratory and Experimental Operations: ~~Until July 1, 2009, the requirements of this Rule, except as provided in Section 8-20-503, shall not apply to equipment used exclusively for research, laboratory analysis or determination of the product quality and commercial acceptance of a printed product, provided emissions of VOC from such equipment do not exceed are less than 136 kilograms (300 pounds) 79.4 kilograms (175 pounds) per month per facility. Effective September 1, 1999, July 1, 2009, the requirements of this Rule, except as provided in Section 8-20-503, shall not apply to equipment used exclusively for research, laboratory analysis or determination of the product quality and commercial acceptance of a printed product, provided the emissions of VOC from such equipment do not exceed are less than 79.4 kilograms (175 pounds) 34.0 kilograms (75 pounds) per month per facility.~~

(Amended April 19, 1989; October 6, 1993; March 3, 1999)

8-20-112 Deleted April 19, 1989

8-20-113 Deleted April 19, 1989

8-20-114 Deleted April 19, 1989

8-20-115 Deleted April 19, 1989

8-20-116 Exemption, Circuitry Printing: The requirements of this Rule shall not apply to circuitry printing.
(Adopted April 19, 1989; Amended March 3, 1999)

8-20-117 Exemption, Heat Shrinkable Tubing and Wire Insulation: The requirements of this Rule shall not apply to the printing of heat shrinkable tubing ~~and or~~ wire insulation.

(Adopted October 6, 1993; Amended March 3, 1999)

8-20-118 Limited Exemption, Water Slide Decals: The requirements of this Rule, except as provided in Section 8-20-503, shall not apply to the screen printing of water slide decals.

(Adopted October 6, 1993)

8-20-119 Exemption, Vapor Degreasers and Cold Cleaners Solvent Cleaners: The requirements of this Rule shall not apply to the ~~use operation~~ of any vapor degreaser ~~or cold cleaner~~ that uses ~~or contains~~ solvents ~~for cleaning~~ to clean press equipment. Such vapor degreasers ~~and cold cleaners~~ are subject to the requirements of Regulation 8, Rule 16: Solvent Cleaning Operations.

(Adopted March 3, 1999)

8-20-120 Limited Exemption, Digital Printing: The requirements of Sections 8-20-302 and 8-20-309 of this Rule shall not apply to digital printing operations, provided applicable records are maintained in accordance with the requirements of Section 8-20-503.

8-20-121 Limited Exemption, Cleaning Products: The requirements of Section 8-20-309 shall not apply to products used to clean ultraviolet lamps and reflectors or electron beam processors; or to the stripping of ultraviolet or electron beam-cured inks, coatings or adhesives. The owner or operator shall maintain records in accordance with the requirements of Section 8-20-503.

8-20-122 Exemption, Printing Operations Subject to Other Rules: Operations that apply ink to substrates and are subject to any of the following District Rules, shall be exempt from the requirements of this Rule:

122.1: Regulation 8, Rule 11: Metal Container, Closure, and Coil Coating

122.2: Regulation 8, Rule 23: Flat Wood Paneling and Wood Flat Stock

8-20-123 Limited Exemption, Wallpaper Screen Printing Operations: Effective July 1, 2009, the requirements of Sections 8-20-307 and 309 shall not apply to hand-operated screen printing on porous (paper) wallpaper, provided the operator can demonstrate that the screen printing operations, including clean-up solvent, emit less than 79.4 kilograms (175 pounds) of VOC in any month, and the operator complies with the requirements of Section 8-20-503.

8-20-200 DEFINITIONS

8-20-201 Approved Emission Control System: A system for reducing emissions of VOC to the atmosphere, consisting of a control device and an emissions collection system which ~~that~~ achieves the overall ~~abatement~~ efficiency specified in ~~the applicable standards section~~ Section 8-20-308 at all times during operation of the equipment being controlled.

(Amended April 19, 1989; October 6, 1993)

8-20-202 Flexographic Printing: ~~The application of words, designs or pictures by roll printing technique in which the pattern to be applied is raised above the printing roll and the image carrier is made of rubber or other elastomeric material.~~ A printing method that uses a raised image carrier on a flexible printing roll to apply words, designs or pictures onto a substrate. The roll is typically made of rubber or other elastomeric materials. The portion of the roll that is not raised is often referred to as the non-image area.

8-20-203 Fugitive Emissions: ~~Emissions of VOC from any portion of the printing, coating or laminating operation other than the drying oven.~~

8-20-204 Graphic Arts Operation: A gravure, publication gravure, flexographic printing, digital printing, screen printing, letterpress, or lithographic printing operation; ~~or any associated coating, or laminating, or adhesive operation to produce a printed product; manufacturing converted flexible packaging materials for packaging of food or health care products for human or animal consumption; and the use of solvents for any surface preparation or cleanup for any of the operations stated above.~~

(Amended December 4, 1985; April 19, 1989; October 6, 1993)

- 8-20-205 Gravure Printing:** An intaglio printing method operation in which the ink is transferred from minute etched wells on a plate to the substrate, which is supported by an impression roller, with excess ink removed by a doctor blade.
- 8-20-206 Deleted October 6, 1993**
- 8-20-207 Non-Porous Substrate:** Any substrate material whose surface prevents penetration by water. Non-porous substrates include, but are not limited to: foil, polyethylene, polypropylene, terephthalate (mylar), terephthalate glycol (PETG), polyvinyl chloride (PVC), and oriented polystyrene cellophane (OPS), paper or paperboard coated with a non-porous surface, metalized polyester, nylon, other copolymers and blends of polymers. Clay-coated printing paper, as defined by the American Paper Institute Classification System, and paperboard coated with clay to prevent water penetration ~~shall be considered a~~ are non-porous substrates for purposes of this Rule.
- 8-20-208 Deleted October 6, 1993**
- 8-20-209 Porous Substrate:** A substrate material whose surface does not prevent penetration by water. Porous substrates include, but are not limited to: paper, paperboard, and any paper product, which that is coated with a porous materials.
- 8-20-210 Publication Gravure:** Gravure printing is a printing method on paper which a substrate that is subsequently formed into books, magazines, catalogues, brochures, directories, newspaper supplements or other types of printed materials.
- 8-20-211 Fountain Solution:** The solution applied to the image plate to maintain the hydrophilic properties of the non-image areas and to keep the non-image area free from ink. Fountain Solution is primarily water and contains at least one of the following materials: etchants such as mineral salts; hydrophilic gums; or VOC additives to reduce the surface tension of the solution.
(Adopted December 4, 1985; Amended March 3, 1999)
- 8-20-212 Letterpress Printing:** A printing method where in which the image area is raised relative to the non-image area and the ink is transferred to the ~~paper~~ substrate directly from the image surface.
(Adopted December 4, 1985)
- 8-20-213 Lithographic Printing:** A plane-o-graphic printing method in which the image and non-image areas are on the same plane.
(Adopted December 4, 1985; Amended October 6, 1993)
- 8-20-214 Screen Printing:** A printing method in which the process where the printing ink passes through a web or a fabric ~~to which a refined form of upon which a stencil~~ has been applied. The stencil openings determine the form and dimensions of the imprint.
(Adopted December 4, 1985)
- 8-20-215 Makeup Solvent:** ~~That solvent which~~ A solvent that is added to printing inks to reduce viscosity.
(Adopted April 19, 1989)
- 8-20-216 Volatile Organic Compounds (VOC):** Any organic compound of carbon (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) that which would be emitted during graphic arts operations, use, application, curing or drying of a solvent or surface coating.
- 216.21 Effective January 1, 1995, for the purpose of calculating the VOC content of an ink, coating, or adhesive under this Rule, any water or any of the following non-precursor organic compounds: shall not be considered to be part of the product:
- Acetone
 - methyl acetate
 - parachlorobenzotrifluoride (PCBTF)
 - cyclic, branched or linear, completely methylated siloxanes (VMS)
- shall not be considered to be part of the ink, coating, or adhesive.
- 216.32 For the purpose of calculating the VOC content of a fountain solution and or cleaning up solvent product, any water or any of the following non-precursor organic compounds listed in subsection 8-20-216.1, shall be considered part of the volume, but shall not be considered to be part of the VOC content of the fountain solution or cleaning product:
- Acetone
 - parachlorobenzotrifluoride (PCBTF)

~~cyclic, branched or linear, completely methylated siloxanes (VMS)~~
(Adopted 4/19/89; Amended 10/6/93; 6/15/94; 12/20/95; 3/3/99)

~~8-20-217 **Graphic Arts Line:** Printing application equipment, coating equipment, laminating equipment, flash-off areas, ovens, conveyors or other equipment operating in an uninterrupted series in a graphic arts operation.~~ (Adopted April 19, 1989)

8-20-218 **Non-Heat Set Ink:** An ink ~~which that~~ dries by oxidation ~~and or~~ absorption into the substrate without the use of heat from dryers or ovens. (Adopted April 19, 1989)

8-20-219 **Extreme Performance Ink/Coating:** For the purposes of this Rule, an ink or coating used in screen printing on a non-porous substrate that is designed to resist or withstand any of the following: more than two years of outdoor exposure; exposure to industrial-grade chemicals, solvents, acids, or detergents; oil products; cosmetics; temperatures exceeding 76°C (170°F); or vacuum forming, embossing or molding.

(Adopted October 6, 1993)

8-20-220 **Heat Shrinkable Tubing and Wire Insulation:** Thermoplastic tubing, including, but not limited to, polyethylene, kynar and mylar tubing that, after printing, is exposed to temperatures exceeding 100°C (212°F) or other environmental extremes, including but not limited to, heat, cold, moisture, fungus, chemical, nuclear, repetitive rubbing, ~~or~~ and contact with hot fluids.

(Adopted October 6, 1993; Amended March 3, 1999)

8-20-221 **Metallic Ink:** An ink that contains greater than 50 grams of metal per liter (0.4 lb/gal) of ink. (Adopted October 6, 1993)

8-20-222 **Sign Ink/Coating:** An ink or coating used in screen printing indoor and outdoor signs (excluding structural components) and murals, including lettering enamels, poster colors, copy blockers, and bulletin enamels. (Adopted October 6, 1993)

8-20-223 **Solvent:** An ~~Organic compounds which that are~~ is used as a diluents, thinners, dissolvers, viscosity reducers, cleaning agents or used for ~~other a~~ similar ~~uses~~ purpose.

(Adopted October 6, 1993)

8-20-224 **Water Slide Decal:** A decal ~~which that~~ is screen printed onto treated paper stock and is removable from the stock by the dissolution of an underlying, water-soluble adhesive or a similar carrier. (Adopted October 6, 1993)

8-20-225 **Web Splicing Adhesive:** An adhesive that is used to join two continuous rolls of substrate.

(Adopted October 6, 1993)

8-20-226 **Key System Operating Parameter:** An emission control system operating parameter, such as temperature, flow rate, ~~or and~~ pressure, that ensures operation of the abatement equipment within manufacturer specifications and compliance with the standards in Section 8-20-301.2, ~~and~~ 308. (Adopted June 15, 1994)

8-20-227 **Circuitry Printing:** Printing on circuit boards, membrane switches and other electronic circuitry. ~~, including membrane switches.~~ (Adopted March 3, 1999)

8-20-228 **Lithographic, Blanket and Roller Washes:** Cleaning products ~~which that~~ are used to wash the blankets, the rollers, and the exterior surfaces of the printing press to remove excess printing inks, oils, and paper pieces. (Adopted March 3, 1999)

8-20-229 **Lithographic, Other Cleaners:** Cleaning products ~~which that~~ are used to clean the other components of the lithographic presses other than blankets, rollers, and exterior surfaces, such as metering rollers and printing plates.

(Adopted March 3, 1999)

~~8-20-230 **Ink Removal Products:** Cleaning products used for the final cleaning of application equipment prior to color change or storage of the application equipment.~~

(Adopted March 3, 1999)

8-20-231 **VOC Composite Partial Pressure:** The ~~S~~sum of the partial pressures of the compounds defined as VOCs. (Adopted March 3, 1999)

8-20-232 **Specialty Flexographic and Lithographic Printing:** Flexographic or lithographic printing or coating on polyethylene, polypropylene, polyester and foil substrates for food packaging and health care products and specialty products on nylon substrates. (Adopted March 3, 1999)

8-20-233 **Ultraviolet Curing:** A process that uses ultraviolet (UV) or visible light radiation to polymerize photosensitive materials on a substrate. The photosensitive material may be formulated into an ink, coating, adhesive or other product.

- 8-20-234 Digital Printing:** A print-on-demand method of printing in which an electronic output device transfers variable data, in the form of an image, from a computer to a variety of substrates. Digital printing methods include, but are not limited to, inkjet printing, electrophotographic printing, dye sublimation printing, thermal wax printing and solid ink printing.
- 8-20-235 Cold Cleaner:** Any equipment that uses liquid solvent as a cleaning agent. A cold cleaner includes, but is not limited to, vats, tubs, spray sinks, spray booths, and batch-loaded dip tanks.
- 8-20-236 Vapor Degreaser:** Any equipment that uses condensed hot solvent vapor as a cleaning agent to clean parts.
- 8-20-237 Adhesive:** A material that is applied for the primary purpose of bonding two surfaces together by surface attachment. Adhesives may be used to facilitate the attachment of two surfaces or substances in varying degrees of permanence.
- 8-20-238 Adhesive Removal Products:** Any product used to clean adhesive application equipment.
- 8-20-239 Ink:** A pigmented and/or dyed liquid or paste used especially for printing and other graphic arts operations.
- 8-20-240 Coating:** A pigmented or clear continuous film applied to a substrate to perform a protective or decorative function.
- 8-20-241 Other Press Parts:** Press parts that do not come into contact with inks, adhesives, or coatings. Other press parts include, but are not limited to, pressure rollers, motors, and belts.
- 8-20-242 Radiation Curing:** The use of electronic radiation to polymerize or cure specially-formulated inks, coatings, and adhesives on a substrate. Electron beam and ultraviolet light are radiation curing methods used in the graphic arts operations.
- 8-20-243 Overall Efficiency:** The efficiency of an approved emission control system, measured by the collection system's capture efficiency multiplied by the destruction efficiency of the control device expressed as a percentage.
- 8-20-244 Electron Beam Curing:** A process that uses electron beam (EB) radiation to polymerize photosensitive materials on a substrate. The photosensitive material may be formulated into an ink, coating, adhesive, or other product.
- 8-20-245 Inkjet Printing:** A digital printing process in which a printing device forms images by applying streams of very fine ink droplets through printheads onto a medium. Inkjet printers include, but are not limited to, piezo, thermal, continuous, and bubblejet printing devices.

8-20-300 STANDARDS

- 8-20-301 Publication Gravure Requirements:** A person shall not operate a publication gravure process unless one or more of the following conditions is satisfied:
- 301.1 The process uses ink and coating that contains less than 300 grams VOC per liter of product, less water, or
 - 301.2 Emissions of VOC from the printing and drying operation are controlled by an emission control system that meets the requirements of Regulation 2, Rule 1, and which has an overall collection and control efficiency of at least 85 percent on a mass basis. This section deleted.

(Amended April 19, 1989; October 6, 1993)

- 8-20-302 Flexographic, Gravure, Publication Gravure, Letterpress, and Lithographic Requirements:** Except as provided in Section 8-20-308, an person owner or operator shall not operate conduct a flexographic, gravure, letterpress, lithographic, related printing or coating operation, unless the owner or operator conducts the operation using products with the following product limits, expressed in grams VOC per liter of product as applied (pounds per gallon), less water, and exempt solvent, or percent VOC by volume:

Product Limits**grams VOC per liter of product as applied, less water and exempt solvent (lbs/gal)**

	<u>Current Limit</u>	<u>Effective 7/1/09</u>
	<u>Less than:</u>	<u>Less than:</u>
Ink	300 (2.5)	300 (2.5)
<u>Flexographic Ink Porous Substrate</u>	300 (2.5)	<u>225 (1.9)</u>
<u>Flexographic Ink Non-Porous Substrate</u>	300 (2.5)	<u>300 (2.5)</u>
Coating	300 (2.5)	300 (2.5)
Adhesive	150 (1.25)	150 (1.25)
Web Splicing Adhesive	300 (2.5)	300 (2.5)

Product Limit**percent VOC by volume**

Fountain Solution

8

*(Amended October 6, 1993; June 15, 1994; March 3, 1999)***8-20-303 Deleted April 19, 1989**

8-20-304 ~~Alternate Emission Control Plan:~~ The requirements of Sections 8-20-301 and 8-20-302 shall not apply to any graphic arts operation or group of such operations which comply with an alternative emission control plan that satisfies all the following requirements:

- ~~304.1 For plans submitted prior to May 26, 1988, emissions of VOC, on a daily weighted average, shall be no greater than that amount which would result if the affected graphic arts line or lines complied with all applicable requirements of Sections 8-20-301, and 302. Averaging shall be performed using pounds of VOC emitted per gallon of solids applied. The VOC content of the ink, coating, adhesive or fountain solution is as applied including any solvent added before or during application.~~
- ~~304.2 The plan shall include methods acceptable for demonstrating compliance with the plan on a daily basis. The information shall be available for inspection by the APCO for each production day at the time of inspection. Such demonstration shall include the following information:~~
- ~~2.1 List of products included in the plan~~
 - ~~2.2 Type of inks, coatings or adhesives which will be applied on each product~~
 - ~~2.3 Amount of ink, coatings or adhesives applied on each product~~
 - ~~2.4 Solids content for each ink, coating or adhesive~~
 - ~~2.5 VOC content per gallon or liter of solids, as applied, for each ink, coating or adhesive~~
 - ~~2.6 Detailed description of how compliance with Section 8-20-304.1 or Section 8-20-304.7.2, where applicable, shall be achieved~~
- ~~304.3 The person submitting the plan shall maintain such records and submit such information on usage and composition, laboratory analysis, source tests or other information as required by the APCO to determine compliance with the plan.~~
- ~~304.4 The plan shall contain credit only for reductions achieved on sources subject to the applicable sections of this Rule. Credit shall not be granted for periods of non-operation, for reductions in surface preparation or cleanup solvent, for coatings exempt from the standards in Section 8-20-301 and 302, nor for emission reductions required by other regulations of this District.~~
- ~~304.5 If any District regulation is adopted or amended after approval of the plan which requires emissions reductions that are included in the plan, a new plan shall be submitted which does not include credit for those reductions.~~
- ~~304.6 The plan shall be submitted to the APCO for review and approval on an annual basis. Submission of the plan shall be within 60 days prior to annual permit renewal. Approval of the plan shall include a 30-day public comment period.~~
- ~~304.7 For alternate emission control plans submitted on or after May 26, 1988, the following additional requirements shall be satisfied:~~

- ~~7.1 Emissions of VOC on a daily basis shall not exceed the maximum daily emission limit as specified in subsection 8-20-304.7.2.~~
- ~~7.2 For the purpose of determining the maximum daily emission limit, the plan shall include a 20 percent net reduction beyond a baseline as calculated in subsection 8-20-304.7.3.~~
- ~~7.3 Baseline emissions shall be calculated as follows:~~
~~Baseline emissions = E x P x U, where~~
~~E = the lower of the actual or allowable pounds of VOC at the time of submission of the plan per pound of solids applied.~~
~~P = the arithmetic average of the lower of the actual or allowable hours of operation per day for the prior two years or two other years if it can be shown to the satisfaction of the APCO that the prior two years are not representative.~~
~~U = the lower of the actual or allowable pounds of solids per unit of production times units of production per day.~~
- ~~Allowable emissions shall be those which would meet the limits specified in Section 8-20-301 and 302, expressed as a solids applied basis.~~
- ~~7.4 The plan submitted pursuant to subsection 8-20-304.2 shall additionally include units of production per hour or per production run and hours of operation or production runs per day to demonstrate compliance with the plan on a daily basis.~~
- ~~7.5 Emissions reductions achieved as a result of compliance with subsection 304.7.2 shall not be deposited into an emissions trading bank. The plan may not take credit for emissions banked as the result of a shutdown.~~
- ~~7.6 Emissions reductions from an air pollution abatement device may not be used to generate credit toward an alternate emissions control plan where the installation of the device was necessary to comply with Sections 8-20-301 or 302.~~
- ~~7.7 Each renewal of a plan shall maintain the maximum daily emission limit established at the time of initial approval of the plan as specified in subsection 8-20-304.7.1. A recalculation of baseline emissions and a 20 percent net reduction as specified in subsections 8-20-304.7.2 and 304.7.3 shall not be required for each plan renewal. Any modification of the provisions of the plan shall constitute a new plan.~~
- ~~7.8 The requirements of subsections 8-20-304.7.1, 304.7.2 and 304.7.3 shall not apply to any plan submitted where the provisions of the plan are limited to coatings applied at a single source subject to the same emission limitation during a single production run. Allowable emissions shall be those specified in subsection 8-20-304.1.~~
- ~~7.9 The provisions of subsection 8-20-304.7 shall be submitted to the Environmental Protection Agency (EPA) as a source-specific revision to the State Implementation Plan (SIP). Sources which obtain an approved alternate emission control plan pursuant to the provisions of subsection 8-20-304.7 remain subject to federal enforcement of existing SIP limits pending federal approval of the plan as a source-specific SIP revision.~~
- ~~304.8 Failure to comply with any provision of an approved plan shall constitute a violation of this Rule. This section deleted.~~

(Amended September 20, 1989; October 6, 1993)

8-20-305 Deleted April 19, 1989

8-20-306 Compliance Statement, VOC Label Requirement: The Manufacturers and suppliers of all inks, coatings, adhesives, and fountain solutions, and cleaning products which that are sold for use in graphic arts operations within the District shall include a designation of their products' VOC content of product, less water, as supplied (as defined in Section 8-20-216) expressed in grams per liter or pounds per gallon, either by calculation or analysis, on data sheets. Effective July 1, 2009,

manufacturers and suppliers shall only distribute within the District inks, coatings, adhesives, fountain solutions, and cleaning products for use in graphic arts operations subject to VOC limits in Section 8-20-302, 307, and 309 in containers with a label that specifies the products' VOC content, expressed in grams per liter or pounds per gallon, and any recommended dilution factor or mix ratio.

(Adopted April 19, 1989; Amended October 6, 1993)

- 8-20-307 Screen Printing Requirements:** Except as provided in Section 8-20-308, ~~an person owner or operator~~ shall not ~~operate~~ conduct a screen printing operation unless the following product limits, expressed in grams VOC per liter (pounds per gallon) as applied, less water and exempt solvent, are met:

Product Limit
grams per liter VOC as applied, less water and exempt solvent (lbs/gal)

	<u>Less than:</u>
Ink	400 (3.3)
Coating	400 (3.3)
Adhesive	150 (1.25)
Extreme Performance Ink/Coating	400 (3.3)
Metallic Ink	400 (3.3)
Sign Ink/Coating	400 (3.3)

(Adopted October 6, 1993; Amended March 3, 1999)

- 8-20-308 Approved Emission Control System Requirements:** The limits of Section 8-20-302, 307, or 309 shall not apply when emissions of VOC to the atmosphere from the printing, coating or laminating, drying and cleaning operations are controlled by an emission control system that meets the requirements of Regulation 2, Rule 1, and has an ~~collection and control~~ overall efficiency of at least 75 percent ~~overall~~ on a mass basis.

(Adopted October 6, 1993; Amended March 3, 1999)

- 8-20-309 Cleaning Product Requirements:** ~~Effective January 1, 2000, Until July 1, 2009, and~~ except as provided in Section 8-20-308, ~~an person owner or operator~~ shall not use cleaning products containing VOC's ~~for the to cleanup of~~ equipment used in graphic arts ~~printing and coating~~ operations, unless such cleaning products meet the ~~following limits are met:~~ set forth below.

Current Cleaning Product Limit

Until 7/1/09

	VOC g/l (lb/gal), including water		VOC Composite Partial Pressure mm Hg @ 20°C (68°F)
Lithographic, Blanket and Roller Washes	300 (2.5)	OR	10
Lithographic, Other Cleaners	300 (2.5)	OR	25
Screen Printing, Ink Removal Products	300 (2.5)	OR	10
Gravure Printing	800 (6.7)	OR	25
Ultraviolet Inks, Ink Removal Products	800 (6.7)	AND	33
Flexographic Printing	810 (6.8)	AND	21
Specialty Flexographic Printing	880 (7.4)	AND	25

(Adopted March 3, 1999)

Effective on the dates indicated, and except as provided in Section 8-20-308, an owner or operator shall not use cleaning products containing VOCs to clean equipment used in graphic arts operations, including cleaning products used in cold

cleaners, unless such cleaning products contain VOC in amounts that are less than the limits set forth below.

Future Cleaning Product Limits

Equipment	Effective 7/1/09	Effective 7/1/10	Effective 7/1/11
	<u>VOC g/l (lb/gal), including water</u>	<u>VOC g/l (lb/gal), including water</u>	<u>VOC g/l (lb/gal), including water</u>
<u>For Press Equipment, except Other Press Parts</u>			
<u>Flexographic Press</u>	<u>500 (4.2)</u>	<u>25 (0.21)</u>	
<u>Specialty Flexographic or Lithographic Press</u>	<u>500 (4.2)</u>		<u>100 (0.83)</u>
<u>Gravure Printing Press (Packaging)</u>	<u>450 (3.7)</u>	<u>25 (0.21)</u>	
<u>Gravure Printing Press (Publication)</u>	<u>450 (3.7)</u>	<u>100 (0.83)</u>	
<u>Letterpress Press</u>	<u>500 (4.2)</u>	<u>100 (0.83)</u>	
<u>Lithographic Press, by Manual Washing</u>	<u>500 (4.2)</u>	<u>100 (0.83)</u>	
<u>Lithographic Press, by Automated Washing</u>	<u>650 (5.0)</u>	<u>100 (0.83)</u>	
<u>Screen Printing Press</u>	<u>500 (4.2)</u>		<u>100 (0.83)</u>
<u>Adhesive Application Equipment</u>	<u>500 (4.2)</u>	<u>25 (0.21)</u>	
<u>Ultraviolet Ink Removal, Any Press Type</u>	<u>650 (5.0)</u>	<u>100 (0.83)</u>	
<u>Other Press Parts</u>	<u>450 (3.7)</u>	<u>25 (0.21)</u>	

8-20-320 Solvent Evaporative Loss Minimization: The requirements of this Section shall apply to ~~any person using the use of~~ solvent for surface preparation and cleanup and to ~~any person the using, mixing, storageing, or and disposing~~ of ink, coating or adhesive:

- 320.1 ~~An person~~ owner or operator shall not use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that ~~is~~ are used for surface preparation, cleanup or ink, coating or adhesive removal.
- 320.2 ~~An person~~ owner or operator shall not store in open containers spent or fresh organic compounds ~~to be used for surface preparation, cleanup or removal of inks, coatings, or adhesives. removal in open containers.~~
- 320.3 ~~An person~~ owner or operator shall not leave containers ~~or of~~ ink, coating, adhesive or fountain solution open when not in use.

(Adopted April 19, 1989; Amended and Renumbered October 6, 1993)

8-20-400 ADMINISTRATIVE REQUIREMENTS

8-20-401 Deleted April 19, 1989

8-20-402 Deleted April 19, 1989

8-20-403 Deleted April 19, 1989

8-20-404 Deleted April 19, 1989

8-20-405 Deleted April 19, 1989

~~8-20-406 Compliance Schedule, Loss of Exemption:~~ Any person who becomes subject to the requirements of Sections 301, 302, or 307 through loss of exemption in Section 110 shall comply with the following increment of progress:

~~406.1 By January 1, 1995, be in full compliance with the requirements of this Rule.~~

~~8-20-407 Small User, Extreme Performance Screen Printing Petition:~~ Any person seeking to use an Extreme Performance Ink/Coating which does not comply with the requirements of Section 8-20-307 shall satisfy the conditions of Section 8-20-110.1 and shall comply with the following requirements:

~~407.1 The user or specifier shall petition the APCO (attn: Enforcement Division) in writing that substitute complying coatings are not available.~~

~~407.2 The petition to the APCO shall include the performance requirements, volume of coating, and VOC level, which is attainable. A facility may submit more than one petition, as long as the conditions of Section 8-20-110.1 are satisfied.~~

~~407.3 If the APCO grants written approval, such petition will be repeated on an annual basis.~~

~~407.4 If the APCO grants written approval, such approval shall contain conditions consistent with the information provided in the petition to monitor usage and insure compliance with Section 8-20-110.1.~~

~~407.5 Records shall be maintained as in Section 8-20-503.~~

(Adopted March 3, 1999)

8-20-408 Registration for Small Facilities: No later than July 1, 2009, any owner or operator conducting a graphic arts operation that emits a minimum of 75 pounds but less than 400 pounds of VOC per month shall register the operation in accordance with Regulation 1, Section 410. Any owner or operator registering a graphic arts operation shall pay the fees required, as set forth in Regulation 3.

8-20-409 Calculation for Determining VOC Emissions for Graphic Arts Operations:

409.1 Total VOC emissions in pounds per month shall be determined as follows:

$$E = E_1 + E_2 + E_3$$

409.2 VOC Emissions from Ink Usage (where throughput is in pounds):

$$E_1 = \sum_{i=1}^n Q_i (\% \text{VOCwt}_i / 100) (1 - R_i)$$

Where:

E₁ = Sum of VOC emissions from ink usage in pounds

Q = Throughput, pounds (minus waste disposal)

VOCwt = Weight percent of VOC per pound of ink, as applied

R = Ink retention factor (0.2 for heat-set lithographic printing, 0.95 for non-heat set lithographic printing, and 0 for all other printing operations)

n = Number of different inks used.

409.3 VOC Emissions from Ink, Coating, and Adhesive Usage (where throughput is in gallons, Method A):

$$E_2 = \sum_{i=1}^n Q_i (\% \text{VOCvol}_i / 100) * D_i * (1 - R_i)$$

Where:

E₂ = Sum of VOC emissions in pounds

Q = Throughput, gallons (minus waste disposal)

VOCvol = Actual volume percent of VOC per gallon of ink, coating or adhesive, as applied

D = Density of the solvent portion of the coating (assume 7 lb/gallon for non-halogenated materials or 11 lb/gallon for halogenated materials)

R = Ink retention factor (0.2 for heat-set lithographic printing, 0.95 for non-heat set lithographic printing, and 0 for all other printing operations, coating and adhesive)

n = Number of different inks, coatings, and adhesives used.

VOC Emissions from Ink, Coating, and Adhesive Usage (where throughput is in gallons, Method B):

$$E_2 = \sum_{i=1}^n Q_i * \text{VOClbs}_i * (1 - R_i)$$

Where:

E₂ = Sum of VOC emissions in pounds

Q = Throughput, gallons (minus waste disposal)

VOClbs = Actual pounds of VOC per gallon in ink, coating or adhesive, as applied

R = Ink retention factor (0.2 for heat-set lithographic printing, 0.95 for non-heat set lithographic printing, and 0 for all other printing operations, coating and adhesive)

n = Number of different inks, coatings, and adhesives used.

409.4 VOC Emissions from Fountain Solution and Cleaning Materials

$$E_3 = \sum_{i=1}^n Q_i * \text{VOClbs}_i$$

Where:

E₃ = Sum of VOC emissions in pounds

Q = Throughput, gallons (minus waste disposal)

VOClbs = Actual pounds of VOC per gallon in fountain solution or cleaning material, as applied

n = Number of different fountain solutions and cleaning materials used.

8-20-500 MONITORING AND RECORDS

8-20-501 Deleted April 19, 1989

8-20-502 Deleted April 19, 1989

8-20-503 ~~Records:~~ Any person complying with the requirements of Sections 8-20-111, 118, 301.1, 302, 307 or 309 shall:

~~503.1 Maintain a current list of inks, coatings, adhesives, fountain solutions and makeup and cleaning solvents in use which states the VOC content of each.~~

~~503.2 Record on a monthly basis the type and amount of all ink, using one of the following methods:~~

~~2.1 Group the quantity of all inks used and identify the maximum VOC content and use the minimum density of 1.01 kg/l (8.44lb/gal).~~

~~2.2 Report process inks and pantone colors separately and use the specific VOC content and density value for each process ink and the highest volatile organic compound and 1.01 kg/l (8.44 lbs/gal) for pantone inks; or~~

~~2.3 Report process inks and pantone colors separately using the maximum VOC content and minimum density for both process and pantone inks or use the density of 1.01 kg/l (8.44 lbs/gal) for pantone inks.~~

~~2.4 Itemize each ink and pantone color and use the specific VOC content and density value for each.~~

~~503.3 Record on a monthly basis the type and amount of each coating, adhesive, fountain solution and makeup, surface preparation, and cleanup solvent used.~~

Recordkeeping Requirements: An owner or operator subject to the recordkeeping requirements of 503.1, 503.2 or 503.3 shall retain and have the following records available for inspection by the APCO for the previous 36-month period:

503.1 An owner or operator claiming an exemption pursuant to Sections 8-20-110 or 111 shall demonstrate applicability by calculating VOC emissions and keep records of the basis of the calculations such as receipts, purchase orders, invoices, material safety data sheets, hazardous waste manifests, and usage records sufficient to verify the facility's emissions.

503.2 An owner or operator claiming an exemption pursuant to Sections 8-20-118, 121 or 123 or subject to the requirements of Sections 8-20-302, 307, or 309 shall:

2.1 Identify the name of the VOC-containing liquid stored in squirt bottles used on press equipment.

2.2 Maintain a list of all inks, coatings, adhesives, fountain solutions, makeup solvents, and cleaning products currently in use to document the VOC content of each.

2.3 Record on a monthly basis the type and amount of each ink, coating, adhesive, fountain solution, makeup solvent, surface preparation solvent, and cleaning product used during that month.

2.4 Total the amount used of each of the following categories on a monthly basis: ink, coating, adhesive, fountain solution, makeup solvent, surface preparation solvent, and cleaning product, including cleaning product used in cold cleaners.

503.3 An owner or operator claiming an exemption pursuant to Section 8-20-120 and operating one of the following types of commercial digital printing equipment: i) any inkjet or liquid electrophotographic that uses solvent-based ink including UV or EB inks; or ii) water-based inkjet that has the capacity to operate at print speeds of at least 10,000 ft² per hour shall:

3.1 Maintain a list of all inks, coatings, adhesives, makeup solvents, and cleaning products currently in use to document the VOC content of each.

3.2 Record and add up on a monthly basis the type and amount of each ink, coating, adhesive, makeup solvent, surface preparation solvent, and cleaning product used during that month.

This requirement shall not apply to digital printing equipment in home offices.

(Adopted 4/19/89; Amended 10/6/93; 6/15/94; 3/3/99)

8-20-504 Deleted October 6, 1993

8-20-505 Emission Control System Monitoring: ~~Effective September 1, 1989, a~~Any person owner or operator who uses an emission control system which is subject to the provisions of Sections 8-20-301.2, 304, and 308 shall install a readily visible temperature gauge which monitors the operating temperature of the emission control system at all times during operation.

(Adopted April 19, 1989; Amended September 20, 1989; October 6, 1993)

8-20-506 Emission Control System, Recordkeeping Requirements: Any person owner or operator subject to Sections 8-20-301.2 and 308 shall:

506.1 Maintain a current list of inks, coatings, adhesives, fountain solutions and makeup solvent in use which states the VOC content of each.

506.2 Record on a daily basis the type and amount of all ink, coating, adhesive, fountain solution and makeup, surface preparation and cleanup solvent used.

506.3 Record key system operating parameters, as defined in Section 8-20-226, on a daily basis.

506.4 Retain and have such records available for inspection by the APCO for the previous 2436-month period.

(Adopted October 6, 1993; Amended June 15, 1994)

~~**8-20-507 Burden of Proof:** Any person claiming the small user exemption per Section 8-20-110 must have information available, such as purchase orders or hazardous waste manifests, that would allow the APCO to verify facility usage. This section deleted.~~

(Adopted October 6, 1993)

8-20-600 MANUAL OF PROCEDURES

8-20-601 Analysis of Samples: Samples of products specified in Sections 8-20-301, 302, and 307 shall be analyzed as prescribed in the BAAQMD Manual of Procedures, Volume III, Methods 21 or 22, or EPA Methods 24 and 24A to determine VOC content. Samples of fountain solutions and cleaning materials products as specified in Sections 8-20-302 and 309, shall be analyzed as prescribed in the Manual of Procedures, Volume III, Method 31.

(Amended October 6, 1993; Amended March 3, 1999)

8-20-602 Determination of Emissions, Operations with a Control Device: ~~Emissions of volatile organic compounds as specified in Sections 8-20-110, 111, 301, 308, and subsection 8-20-304.3 shall be measured as prescribed by any of the following methods: 1) BAAQMD Manual of Procedures, Volume IV, ST-7, 2) EPA Method 25 or 25A. When either EPA Method 25 or 25A is used, control device equivalency shall be determined as prescribed in 55 FR 26865 (June 29, 1990). A source shall be considered in violation if the VOC emissions measured by any of the referenced test methods exceed the standards of this rule. When determining emissions of VOC for lithographic printing facilities, the following substrate retention factors of VOC for inks will be applied: 20 percent retention of the VOC content for heatset inks and 95 percent retention of the VOC content for non-heatset inks, based on the VOC content as determined by Section 8-20-601. For the purpose of determining abatement device efficiency, any acetone, PCBTF or VMS shall be included as volatile organic compounds. A source shall be considered in violation if the VOC emissions measured by any of the reference test method exceed the standards of this rule.~~

Emissions of volatile organic compounds from source operations controlled by an emission control system shall be determined as follows:

602.1 Capture efficiency shall be determined as specified in 40 CFR 51, Appendix M, Test Methods 204 – 204F, as applicable.

602.2 Control device destruction efficiency shall be determined as specified in the Manual of Procedures, Volume IV, ST-7 or EPA Method 25 or 25A.

602.3 For the determination of control device destruction efficiency, any non-precursor organic compound specified in Section 8-20-216 shall be included as a volatile organic compound.

602.4 The overall efficiency of an emission control system, expressed as a percentage, shall be calculated according to the following equation:

$$OE = [CE \times DE]/100$$

Where:

OE = Overall efficiency

CE = Capture efficiency

DE = Control device destruction efficiency

602.5 A source shall be in violation if the VOC emissions exceed the standards of this rule as measured by any of the reference test methods.

(Amended April 19, 1989; Sept. 20, 1989; Oct. 6, 1993; June 15, 1994)

8-20-603 Deleted October 6, 1993

8-20-604 Determination of VOC Composite Partial Pressure: Emissions of VOC Composite Partial Pressure shall be measured as prescribed by BAAQMD Manual of Procedures, Volume III, Method 46. *(Adopted March 3, 1999)*

8-20-605: Determination of Emissions, Lithographic Printing Presses: For the purpose of determining exemptions pursuant to Section 8-20-110 or 111, the following substrate retention factors will be applied: 20% retention of the VOC content of heatset inks, and 95% retention of the VOC content of non-heatset inks.

8-20-606: Grams of VOC per liter for fountain solutions and cleaning products: Calculate the VOC content by using the following equation:

$$\text{VOC} = \frac{W_s - W_w - W_{es}}{V_m}$$

Where: W_s = Weight of volatile compounds in grams.

W_w = Weight of water in grams.

W_{es} = Weight of exempt compounds in grams.

V_m = Volume of material in liters.

8-20-607: Grams of VOC per liter for coatings, inks, or adhesives: Calculate the VOC content by using the following equation:

$$\text{VOC} = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

Where: W_s = Weight of volatile compounds in grams.

W_w = Weight of water in grams.

W_{es} = Weight of exempt compounds in grams or pounds.

V_m = Volume of material in liters or gallons.

V_w = Volume of water in liters.

V_{es} = Volume of exempt compounds in liters.